The Mechanization of Earthwork in Frozen Soil

and eventually the wedge begins to jar and to jolt, this destroying the structure of the soil. The winch of the tractor is then operated, the wedge is pulled out from the soil by means of a wire rope, and is again driven into the soil at a distance of 400 to 500 m from the first place. The earth destroyed by the wedge is then removed by means of an excavator. The type of equipment which entails suspending the Dieselhammer on the excavator will be worth while only if it is possible, after driving the wedge into the ground, to tear away the clot of earth by means of pressure. The ridge plow used for hard-frozen soils is a suspended system of the type of a bucket conveyer excavator. (Fig. 2). This machine is able to deal with 30 - 40 m in one working operation and at a freezing depth of 0,8 - 1,0 m. Wide use is at present being made of wedge-rammers and ball-rammers, which are dropped from the jib crane of the excavator. Wedge- and ball-rammers are of greater efficiency the weight of which amounts to 1500 kg. The ball-rammer (see fig. 4) is intended only for the destruction of sandy soil and sandy ground, whereas the wedge-rammer should be used for loam- and loamy soil. The use of the suspension system, however, causes considerable wear within a short time. Actually, this method is less effective than the application of a Dieselhammer on a tractor or a tractor loader which, with a falling weight of 600 and 1200 kg respectively may be recommended for work of

Card 2/3

The Mechanization of **Earthwork in Frozen Soil**   95-11-11/14

smaller volume and for the cutting of trenches - machines
with chain cutters- . There are 5 figures.

AVAILABLE: Library of Congress

Card 3/3

VEKSMAN, A.M., inzh.; GAL'PERIN, M.I., kand.tekhn.nauk.

"Complete mechanization of earthwork in constructing industrial buildings of machine-building plants" and "Complete mechanization of earthwork in constructing large single-story industrial buildings" by [inzhener Instituta tekhniko-ekonomicheskoy informatsii AN SSSR, Moskva] L.S. Lifshits. Reviewed by A.M. Veksman, M.I. Gal'perin. Nov.tekh. i pered. op. v stroi. 19 no.6:32-33 Je '57. (MIRA 10:10)
(Industrial buildings) (Earthwork)
(Lifshits, L.S.)

ABERGAUZ, V.D.; GAL'PERIN, M.I.; BESSER, Ya.R., kand.tekhn.nauk, nauchnyy red.; KRYUGER, Yu.V., red.izd-va; MEL'NICHENKO, F.P., tekhn.red.

[Using vibrators in building] Vibrator na stroike. Izd.2-e, perer. i dop. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1958. 79 p. (MIRA 13:3)
(Vibrators)

GAL'PERIN, M.I., kand. tekhn. nauk.

Destroying rocks by vibration cutting. Stroi. pred. neft. prom.
3 no.3:13-16 Mr '58.   (MIRA 11:6)

(Rock drills)

GALPERIN, M.I.

116-58-4-17/23

AUTHORS: Gandel'sman, V.B., and Gal'perin, M.I. Engineers

TITLE: Machines for the Extraction of Natural Wall and Lining Stones
                (Mashiny dlya dobychi yestestvennogo stenovogo i oblitso-
                vochnogo kamnya)

PERIODICAL: Mekhanizatsiya Trudoyëmkikh i Tyazhëlykh Rabot, 1958, Nr 4,
                pp 37-40 (USSR)

ABSTRACT: The authors give a detailed description of various stone
                cutting and stone moving machines produced by the Moskovskiy
                zavod "Strommashina" (Moscow "Strommashina" Plant). In 1956
                the USSR produced 3,600,000 cubic meters of natural wall stone,
                or 1.5 billion standard bricks. By 1960, stone production is
                supposed to reach 15,250,000 cubic meters. The following So-
                viet inventors have played an important role in developing
                stone cutting machinery: Petrik, Zil'berglit, Stolyarov, Ga-
                lunin, Zastupaylo, Chegodayev, the brothers Zhuchenkov and
                others. There are 5 figures.

AVAILABLE: Library of Congress

Card 1/1   1. Stone cutting machines   2. Construction-Equipment   3. Quarries-
                    Equipment

GAL'PERIN, M.I., inzh.

At the permanent All-Union Building Exhibition. Nov. tekh. 1 pered.
op. v stroi. 20 no.6:19-23 Je '58.   (MIRA 11:6)
              (Moscow--Building machinery--Exhibitions)

GAL'PERIN, M.I., dokter tekhn.nauk.; NIKOLAYEV, B.A., inzh.

Machines for destructing frozen grounds. Nov. tekh. i pered. op.
v stroi. 20 no.9:11-14 S '58. (MIRA 11:10)
(Frozen ground) (Earthwork--Cold weather conditions)

GAL'PERIN, Mark Isayevich; ABEZGAUZ, Viktor Davidovich; MAMUROVSKIY,
A.A., retsenzent; NIKITIN, A.G., inzh., red.; CHERNOVA, Z.I.,
tekhn.red.; UVAROVA, A.F., tekhn.red.

[Stonecutting machines] Mashiny dlia rezaniia kamnia. Moskva.
Gos.nauchno-tekhn.izd-vo mashinostorit.lit-ry, 1959. 283 p.
(MIRA 12:12)
1. Chlen-korrespondent Akademii stroitel'stva i arkhitektury (for
Mamurovskiy).
(Stonecutting)

SOV/113-59-3-12/22

28(1),25(5)

AUTHOR: Gal'perin, M.I., and Gandel'sman, B.V., Engineers

TITLE: A Method Increasing the Productivity of Stone Cutting
             Machines (Puti povysheniya proizvoditel'nosti kamne-
             reznykh mashin)

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, 1959,
             Nr 3, pp 36-38 (USSR)

ABSTRACT: The authors state that more than a thousand stone cut-
             ting machines are actually in use at various quarries. In
             1958, 3.6 billion wall stones were produced, which re-
             presents 9.6% of the whole production of wall-building
             material. In 1959 this production will increase to 11
             billion units, representing 13.3% of the whole produc-
             tion of wall-building materials. In order to ensure this
             development, it is absolutely necessary to raise the stan-
             dards of mechanization in the quarries. Experience shows,
             that the best work is performed by high-bench machines,
             its basic advantage being the 13-15 saws, working simul-
Card 1/2   taneously. The authors analyze the geometrical forms of

A Method Increasing the Productivity of Stone Cutting Machines

SOV/118-59-?-12/22

the saw teeth, the quality of the material the instru-
ments are made from, and conclude that it is absolutely
necessary for the enterprises to redesign their stone-
cutting machines and improve their quality, and for fac-
tories producing disc-saws to improve their design and
use spade shape teeth and a negative front angle. Fur-
thermore, new machines for stone transportation and re-
moval of cuttings should be manufactured according to
new principles. There are £ graphs and 1 table.

Card 2/2

GAL'PERIN, M.I., doktor tekhn. nauk; GANDEL'SMAN, V.B., inzh.

Cutting tools and operations of stonecutting machinery. Stroi. mat.
5 no.4:16-19 Ap '59.   (MIRA 12:6)
                       (Stonecutting—Equipment and supplies)

(SOV/132-59-7-16/17

AUTHOR: Gal'perin, M.I.

TITLE: On the Book "Exploratory Drilling" by B.S. Vozdvizhen-
             skiy, S.A. Volkov, B.S. Filatov, N.I. Lyubimov and
             I.A. Trusov

PERIODICAL: Razvedka i okhrana nedr, 1959, Nr 7, pp 63-64   (USSR)

ABSTRACT: This is a review of the above mentioned book.

Card 1/1

GAL'PERIN, M.I., doktor tekhn.nauk

"Building and assembling cranes; a textbook. No.1. Truck-
mounted cranes and cranes with pneumatic tires." Re-
viewed by M.I.Gal'perin. Mont.i spets.rab.v stroi.
22 no.9:3 of cover S '60.   (MIRA 13:8)
        (Cranes, derricks, etc.)

GAL'PERIN, Mark Isayevich, doktor tekhn. nauk; LEVCHENKO, Ya.V., red.;
SHILLING, V.A., red.izd-va; BELOGUROVA, I.A., tekhn. red.

[Mechanical means for breaking up frozen soils] Mekhanicheskie sposoby
rasrusheniia merzlykh gruntov; kratkaia stenogramma lektsii. Lenin-
grad, 1961. 33 p.   (MIRA 14:7)
     (Frozen ground)   (Earthmoving machinery)

GAL'PERIN, N.I., doktor tekhn.nauk; LEVIN, N.G., inzh.

Study of the operation of blades on stone-cutting machines.
Stroi. i dor. mash. 6 no.9:33-34 S '61.   (MIRA 14:10)
            (Stonecutting)

ABEZGAUZ, V.D., kand.tekhn.nauk; GAL'PERIN, I.I., doktor tekhn.nauk

Problems of developing and utilizing machines for working frozen ground. Stroi. i dor. mash. 6 no.10:10-20 O '61.
(MIRA 14:10)

(Earthmoving machinery)
(Frozen ground)

LEYKIN, M.G., inzh.; GAL'PERIN, M.I.; doktor tekhn.nauk

Modernization of circular saws on the SM-89A and SM-518 stone-
cutting machines. Stroi. mat. 7 no.3:33-34 Mr '61. (MIRA 14:4)
(Stone cutting)

NIKOLAYEV, B.A., inzh.; GAL'PERIN, M.I., doktor tekhn.nauk

Using machinery in working frozen ground. Transp. stroi. 11 no.1:
54-55 Ja '61.

        (Frozen ground)   (MIRA 14:1)
                    (Earthmoving machinery)

GAL'PERIN, M.I., doktor tekhn.nauk

"Manufacturing and installing pipelines; Collection of articles."
Reviewed by M.I. Gal'perin. Mont. i spets. rab. v stroi. 23
no. 2:31-32 F '61.   (MIRA 14:1)
                        (Pipelines)

DOMBROVSKIY, N. G., prof., doktor tekhn. nauk; GAL'PERIN, M. I.,
doktor tekhn. nauk

Breaking of hard and frozen ground. Sbor. trud. MISI no.39:
50-54 '61.   (MIRA 16:4)

1. Nauchno-issledovatel'skiy institut Ministerstva stroitel'-
stva RSFSR. 2. Chlen-korrespondent Akademii stroitel'stva i
arkhitektury SSSR (for Dombrovskiy).

(Excavation)

GAL'PERIN, M.I., doktor tekhn.nauk; SATOVSKIY, B.I.

"Bucket excavators" by N.G. Dombrovskii, S.A. Pankratov. Reviewed by M.I. Gal'perin, B.I. Satovskii. Mekh. i avtom.proizv. 16 no.1: 57 Ja '62.

(MIRA 15:1)

1. Glavnyy konstruktor Uralmashzavoda po ekskavatorostroyeniyu (for Satovskiy).

(Excavating machinery)
(Dombrovskii, N.G.) (Pankratov, S.A.)

ABEZGAUZ, V.D., kand. tekhn. nauk; GAL'PERIN, M.I., prof., doktor
tekhn. nauk; VRONSKIY, L.N., ved. red.; BASHMAKOV, G.M.,
tekhn. red.

[Working frozen ground in mechanized trench digging]Razra-
botka merzlykh gruntov pri mekhanizirovannom ryt'e transhei.
Moskva, Gostoptekhizdat, 1962. 93 p.   (MIRA 15:11)
    (Frozen ground)   (Excavating machinery)

GAL'PERIN, M.I., doktor tekhn.nauk

"Rigging operations in the erection of equipment of oil refineries"
by [inzh.] Z.B. Kharas. Reviewed by M.I. Gal'perin.   Mont. i spets.
rab. v stroi. 24 no.4:31-32 Ap '62.   (MIRA 15:7)
        (Hoisting machinery—Rigging) (Petroleum refineries)
                    (Kharas, Z.B.)

NIKOLAYEV, B.A., inzh.; GAL'PERIN, M.I., doktor tekhn.nauk

Breaking down forzen ground by chipping it away. Stroi.truboprov.
7 no.9:12-14 S '62.   (MIRA 15:11)
                        (Frozen ground)

GAL'PERIN, M.I., doktor tekhn.nauk

"Construction equipment" by N.M. Petrov. Reviewed by M.I.
Gal'perin. Stroi. i dor. mash. 7 no.9:38-39 S '62. (MIRA 15:10)
(Construction equipment)
(Petrov, N.M.)

GAL'PERIN, M. I., doktor tekhn. nauk; NIKOLAYEV, B. A., inzh.

Study of the breaking down of frozen ground by wedges. Stroi.
i dor. mash. 7 no.11:27-28 N '62.   (MIRA 16:1)

(Frozen ground)

GAL'PERIN, M.I., doktor tekhn. nauk; LEYKIN, M.G., inzh.

Power indices of the work of cutters on stonecutting machinery.
Mekh. stroi. 18 no.11:11-12 N '61.   (MIRA 16:7)

(Inkerman—Stonecutting)

ZEN'KOV, I.S., prof.; PETROV, N.M.; KOTOVICH, B.M., dots.;
GAL'PERIN, M.I., doktor tekhn. nauk; ZEN'KOV, I.S.,
prof., red.; TITOVA, B.V., red.

[Main trends in the mechanization and automation of
the construction industry; introductory lecture for
students in the construction and mechanics courses
of the All-Union Engineering and Construction Cor-
respondence Institute] Osnovnye napravleniia v mekha-
nizatsii i avtomatizatsii stroitel'stva; vvodnaia
lektsiia dlia studentov stroitel'nykh i mekhanicheskikh
spetsial'nostei VZISI, 1961. 23 p.   (MIRA 17:9)

1. Moscow. Vsesoyuznyy zaochnyy inzhenerno-stroitel'nyy
institut.

AtabekIIA, Viktor [Ivanovich] ... ... [And] Isayevich, H. ... ,
A.A., nauchn, red.

[Vibraters at construction sites] Vibrator na stroike. Izd. ...
perer. Moskva, Stroiizdat, 1964. 94 p.   (MIRA ...

L 30783-66   EWP(k)/EWT(d)/EWT(m)/EWP(h)/T-2/EWP(l)/EWP(w)/EWP(v)   IJP(c)   EM

ACC NR: AP6022100   SOURCE CODE: UR/0114/66/000/002/0045/0045

AUTHOR: Gal'porin, M. I. (Engineer); Chekulayev, A. V. (Engineer)

ORG: none

TITLE: Transport by water of odd-shaped, heavy working rotors of powerful radial-axial hydroturbines

SOURCE: Energomashinostroyeniye, no. 2, 1966, 45

TOPIC TAGS: inland waterway transportation, transportation equipment, crane, turbine rotor

ABSTRACT: The experience of shipping two large, heavy turbine rotors from Leningrad to Krasnoyarsk on the Yenisey River showed that the loading, shipping and unloading presented no insurmountable problems. The material was loaded at Leningrad with a 350-ton crane, and shipped during July and early August to the destination. The greatest problems were created by locks on the Belomorsk-Baltic canal which were too small to admit the transport barge plus tugs, requiring the barge to be pushed into the locks with usage of only one tug. The methods used to fasten the heavy rotors down in the barge proved satisfactory, even under storm conditions. [JPRS]

SUB CODE: 13 / SUBM DATE: none / ORIG REF: 001

Card 1/1   JS   UDC: 621.224.004.3(047)

L 29132-66

ACC NR: AP6018689   SOURCE CODE: UR/0114/65/000/003/0032/0034

AUTHOR: Bronovskiy, G. A. (Engineer); Gal'perin, M. I. (Engineer)   38,
                                                                                                B
ORG: none

TITLE: Some aspects of the production of turbines for the Krasnoyarskaya Hydro-
electric Station

SOURCE: Energomashinostroyeniye, no. 3, 1965, 32-34

TOPIC TAGS: hydroelectric power plant, metal casting, welding, turbine

ABSTRACT: The construction of the world's first 508 thousand kilowatt
turbines raised numerous new problems. The authors list and describe in
detail basic peculiarities of the construction process. The Novo-Kramatorsk
Machine Factory had to develop new procedures for casting the 36.8 t half-
sections of the outer rim, exceeding in size those made for the Bratskaya
hydroelectric station. Special methods have been developed also for the
casting of the 8,000 kg vanes by the joint effort of the Central Scientific-
Research Institute for Technical Machine-Building, the Nevskiy Machine-
Building Factory im. V. I. Lenin, and the Leningrad Metallurgical Factory im.
XXII Congress of the CPSU. The Novo-Kramatorsk Machine Factory had to solve
the problems of producing the extremely large shaft (2300/1900 mm in diameter)
with a comparatively thin wall of the shaft (200 mm). Further problems were

Card 1/2   UDC: 621.224:65.011.56

L 29132-66

ACC NR: AP6018689

encountered in connection with welding, need for new stronger materials, and transportation. New welding methods were designed and tested by the Institute for Welding im E. O. Paton; parts were made of three types of steel, while the working wheels of the new turbine had to be transported by ship rather than by rail. The article is packed with technical data and descriptions of new technological and engineering solutions, down to a description of the loading of the wheel on the ship and its voyage along the Northern route. Orig. art. has: 4 figures. /JPRS/

SUB CODE: 13, 10 / SUBM DATE: none / ORIG REF: 003

Card 2/2

GAL'PERN, M.L., inzh.

Concerning the principal schematics of electric substations. Elek.
sta. 32 no.8:54-55 Ag '61. (MIRA 14:10)
(Electric substations)

GAL'PERIN,M.M.; ANTIPOV,L.R.

We should set up mass production of uniform floor-type hand
trucks. Tekst.prom.15 no.7:28-30 Jl'55.   (MIRA 8:10)
                    (Hand trucks)

AUTHORS: Shakh-Nazaryan, A.M., Antipov, P.A., Gal'perin, L.M.,   118-58-4-12/23
           Engineers

TITLE: The Mechanization of Secondary Auxiliary Operations in Textile
           Enterprises (Mekhanizatsiya podsobno-vspomogatel'nykh rabot
           na tekstil'nykh predpriyatiyakh)

PERIODICAL: Mekhanizatsiya Trudoyëmkikh i Tyazhëlykh Rabot, 1958, Nr 4,
           pp 51-52 (USSR)

ABSTRACT: This article criticizes the lack of mechanization of internal
           transport in the textile industry. A study of this matter was
           conducted by the Tsentral'nyy nauchno-issledovatel'skiy insti-
           tut khlopchatobumazhnoy promyshlennosti (The Central Scientific
           Research Institute of the Cotton Industry). There are 2 figures.

AVAILABLE: Library of Congress
Card 1/1   1. Textiles—Transportation   2. Textiles—Production

GAL'PERIN, M.M., inzh.; ANTIPOV, L.R., inzh..

Efficient methods of transporting yarn. Tekst. prom. 18 no.6:29-32
Je '58.
(MIRA 11:7)
(Yarn) (Conveying machinery)

ANTIPOV, Lev Romanovich, inzh.; GAL'PERIN, Mikhail Moiseyevich,
inzh.; KLEYNERMAN, Zinoviy Izrailovich, inzh.; CHUGREYEVA,
V.N., red.; VINOGRADOVA, G.A., tekhn. red.

[Mechanization of intrafactory transportion in the spinning
factories of the cotton industry] Mekhanizatsiia vnutrifab-
richnogo transporta na priadil'nykh fabrikakh khlopchato-
bumazhnoi promyshlennosti. Moskva, Gizlegprom, 1963. 226 p.
                                        (MIRA 17:2)

AVAYEV, Sergey Aleksandrovich; GAL'PERIN, Mikhail Moiseyevich;
KRYLOV A.P., retsenzent; DIVAVIN, N..., retsenzent;
AGADZHANOVA, I.A., red.

[Fundamentals of mechanization and automation in the
textile industry] Osnovy mekhanizatsii i avtomatizatsii
proizvodstva v tekstil'noi promyshlennosti. Moskva, Izd-
vo "Legkaia industriia," 1964. 245 p. (MIRA 18:1)

SADOV, F.I., doktor tekhn. nauk, prof.; CHAPLINA, N.D.; IVLIYEV,
V.G.; LUR'YE, A.L.; ABEZGUZ, A.Ya.; DYNIN, P.M.; ESKIN,
I.L.; VASIL'YEV, G.V.; GAL'PERIN, M.M., retsenzent;
IL'INSKIY, N.S., retsenzent; MORYGANOV, P.V., doktor
tekhn. nauk, prof., retsenzent; MOSHKIN, V.I.,
retsenzent; RUDAKOV, D.N., retsenzent; TSVETKOV, M.N.,
retsenzent; DUKHOVNYY, F.N., red.

[Design and planning of finishing factories for the cotton
industry] Proektirovanie otdelochnykh fabrik khlopchato-
bumazhnoi promyshlennosti. Moskva, Legkaia industriia,
1965. 355 p.   (MIRA 18:7)

GAL'PERIN, M.M.

Mechanization of the conveying of weaver's beams and of their installation on looms. Tekst. prom. 25 no.9:5-12 S '65.
(MIRA 18:10)

1. Zamestitel' nachal'nika otdela po mekhanizatsii transporta Gosudarstvennogo proyektnogo instituta No.1 po proyektirovaniyu predpriyatiy po tekstil'nym otraslyam promyshlennosti.

MIKHAYLOV, N.V., doktor tekhnicheskikh nauk; GAL'PERIN, M.P., kandidat
tekhnicheskikh nauk.

Useful book ("Using reinforced concrete sections in people's
democracies" by N.M.Kurek and M.V. Ostrovskii. Reviewed by
N.V. Mikhailov, M.P. Gal'perin). Stroi.pred.neft.prom. 1 no.8:
31 O '56.

(MLRA 9:12)

(Europe, Eastern--Reinforced concrete construction)
(Kurek, N.M.) (Ostrovskii, M.V.)

AUTHOR: Gal'perin, M.V.(Moscow); Korotkevich, G. I.(Moscow); Minsker, I. N.
(Moscow); Ry*basov, V. I. (Moscow)
TITLE: Solving nonlinear mathematical programming problems having one or more
extrema on analog computers

TOPIC TAGS: computer programming, analog computer, nonlinear programming,
mathematical programming, Pyne gradient method

ABSTRACT: The authors discuss Pyne's gradient method for analog computer solution of
linear and convex programming problems from the standpoints of accuracy, speed and
controllability. A monotonous convex function is considered, using a piecewise linear
approximation, and an expression is derived for the time to solve a one-extremum
programming problem using Pyne's method; the errors in the solution are also investi-
gated. Using broad-band transistor amplifiers with a 100 ns time constant and β-blocks
having a 50 ns risetime, a linear or quadratic problem can be solved in less than 10
μsec. Methods are next considered for reducing multiple-extremum problems to a
finite set of one-extremum problems suitable for determinate solution (in contrast to the
Monte Carlo approach). The block-diagram for solving the mutiple extremum problem

Card 1/2

ACCESSION NR: AP4044827

is then discussed in detail. Limitations of the method are determined basically by the static accuracy of the function generator, the performance of diode nonlinearity units and the speed of the analog unit, which can solve, on the average, 5×10^4 one-extremum problems per second, typical times being 1-2 hours for an accuracy of 2% and 5 minutes for 3-4%. Thus, the method is useful for finding the type of rough global minimum which is adequate for many control problems. Orig. art. has: 3 figures and 42 formulas.

ASSOCIATION: none

SUBMITTED: 27Nov63   ENCL: 00   SUB CODE: DP

NO REF SOV: 004   OTHER: 003

Card 2/2

ACCESSION NR: AP4036517   S/0103/64/025/005/0724/0726

AUTHOR: Gal'perin, M. V. (Moscow)

TITLE: Analysis of the error of electron analog devices due to finite passband of operational amplifiers

SOURCE: Avtomatika i telemekhanika, v. 25, no. 5, 1964, 724-726

TOPIC TAGS: amplifier, operational amplifier, operational amplifier error

ABSTRACT: Based on P. Dow's (Trans. IRE, PGEC, v. 6, no. 4, 1957) and A. B. Macnee's (Proc. IEE, v. 111, 1952) findings, these formulas for max and min relative errors are derived:

$$\delta_{\text{макс}} = -\frac{2nKT_y}{T_{\text{м}}} \qquad \delta_{\text{мин}} = \frac{nKT_y}{\delta T_{\text{м}}}$$

where $K = R/R_j$; T_y is the time constant of the closed amplifier; $T_{\text{м}} = R_j C_\beta$;

Card 1/2

ACCESSION NR: AP4036517

n is the number of summing amplifiers; e is the base of natural logarithms. Orig. art. has: 14 formulas.

ASSOCIATION: none

SUBMITTED: 20Mar63   DATE ACQ: 03Jun64   ENCL: 00

SUB CODE: EC   NO REF SOV: 001   OTHER: 002

Card 2/2

ACCESSION NR: AT4014052

AUTHOR: Gal'perin, M. Ya.

S/3073/63/000/000/0237/0247

TITLE: Effect of surface damage on fatigue strength of structural steels

SOURCE: Prochnost' metallov pri peremenny*kh nagruzkakh; materialy* tret'yego
soveshchaniya po ustalosti metallov, 1962 g. Moscow, Izd-vo AN SSSR, 1963, 237-247

TOPIC TAGS: fatigue, fatigue strength, steel, structural steel, steel fatigue, surface
damage

ABSTRACT: Surface defects of small extension and depth, such as marks, scratches, saw
cuts and nicks, are frequently encountered in practice. However, there is not sufficient
information available with regard to the effect of such damage on the fatigue strength. An
investigation was carried out to determine the influence of surface damage of very limited
extension on the strength of the structural steels 45 and 45 Kh. The composition and
mechanical properties of these steels are tabulated (see Table 1 of the Enclosure). The
extent to which the geometry of notches, e.g., length, depth, and area occupied by the
damage in the net section, changes the fatigue strength of tested specimens was determined.
In addition, defects of limited extent were compared with corresponding continuous ring
grooves with respect to their effect on fatigue strength. For static strength tests specimens

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ACCESSION NR: AT4014052

7.52 mm in diameter were made of both of the tested steels. For fatigue strength tests specimens 7.52 and 15 mm in diameter were used. Ring grooves and notches of limited extension simulating local defects were ground with a depth of 0.1 to 1.7 mm and with a bottom radius of 0.05 to 2.5 mm; as shown in Fig. 1 of the Enclosure. Reference tests on static strength were performed on a hydraulic testing machine at a deformation speed of 1 mm/min. Rotation bending fatigue strength tests were performed on a NU-type machine at a frequency of 2860 cycles per minute. Fatigue strength was determined for a 10^7 cycle life. Theoretical stress concentration factors at the ring grooves, determined according to Neuber, attained values of $K_t = 4.5$ for 7.52 mm diameter specimens and $K_t = 6.5$ for 15 mm diameter specimens. Stress concentration factors cannot be determined by Neuber equations for notches simulating local damage on cyclindrical specimens. On the basis of test results, the fatigue notch factors K_f were obtained for both notched and grooved specimens; K_f represents the ratio of the fatigue strength of a smooth specimen to that of a notched specimen, whereby K_f values are lower than K_t values. Fatigue notch factors K_f were plotted over geometrical parameters of the notches sections. Table 2 of the Enclosure gives a comparison of fatigue strengths of grooved and notched specimens at various groove (or notch) parameters for the investigated steels 45 and 40 Kh. On the basis of the test results, it was concluded that: (1) surface defects of limited extension, rounded at the

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ACCESSION NR: AT4014052

notch bottom with a radius of 0.1 mm on cylindrical specimens of 7.52 mm diameter do not reduce the static strength of steel 45 Kh provided the depth of damage does not exceed 1.0 mm, nor the static strength of steel 40 Kh provided the depth of damage does not exceed 0.3 mm; (2) for specimens of the same diameters, surface defects of very limited extension, rounded at the notch bottom with a radius of 0.1 mm and having different depths not less than 0.05 mm, reduce the fatigue strength of steels 45 and 40 Kh at the same rate as do continuous turned ring-grooves of corresponding depth and bottom radius of curvature. In the case of high strength steel 40 Kh, the comparable values scatter within 5 to 10%; (3) with a change in the absolute dimensions, surface defects of limited extension, rounded at the notch bottom with a radius of 0.1 mm have a more pronounced influence on the fatigue strength of round shafts with steel 40 Kh (high strength); (4) surface defects of limited extension, rounded at the notch bottom with a small radius may be more detrimental to fatigue strength than continuous turned ring-grooves of the same cross-section; these reduce the fatigue strength of round shafts of steels 45 and 40 Kh by 18 and 30%, respectively. Orig. art. has: 4 tables, 12 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: MM,AS

Card: 3/6

DATE ACQ: 20Feb64

NO REF SOV: 004

ENCL: 03

OTHER: 001

GAL'PERIN, M.Ya.; LEBEDINSKIY, A.P.; ZELENSKAYA, R.G.

Knock testing of automobile engines. Trudy lab.dvig. no.1:61-87
'55.   (Automobiles--Engines)   (MIRA 9:9)

ARONOV, D.M., kandidat tekhnicheskikh nauk; LEBEDINSKIY, A.P.; GAL'PERIN, N.Ya.

Nonuniform performance of engine cylinders and gasoline octane
requirements. Avt.i trakt.prom. no.4:3-8 Ap '57.   (MLRA 10:5)

1. Nauchno-issledovatel'skiy avtomotornyy institut i Institut
mashinovedeniya AN SSSR.
                        (Automobiles--Engines--Cylinders)
                        (Gasoline--Antiknock and antiknock mixtures)

SOV/180-59-2-10/34

AUTHORS: Gal'perin, M.Ya., Kostyukova, Ye.P., and Rovinskiy, B.M.
              (Moscow)

TITLE: Change in the Substructure of Metals in Repeated Cyclic
              Loading (Izmeneniye substruktury metallov pri mnogokrat-
              nom tsiklicheskom nagruzhenii)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye tekhnickeskikh
              nauk, Metallurgiya i toplivo, 1959, Nr 2, pp 56-61 (USSR)

ABSTRACT: Increasing attention has been given recently to the
              substructure of crystal grains. Rovinskiy and Rybakova
              (Ref 5) and others (Ref 4) have shown that the yield-
              point strength and hardness increase with decreasing
              sub-grain size. The present work deals with substructural
              changes in 99.99% pure aluminium and electrolytic nickel
              during repeated cyclic loading at 25 cycles/second on a
              type MUP-150 machine. Fig 1 shows the form of the test
              pieces. Aluminium test pieces were annealed for two
              hours at 450 - 500 or 600 ºC to obtain weakly- or
              strongly-developed substructures, respectively. Nickel
              test pieces were vacuum annealed for two hours at 900ºC.
              The strain during tests was determined with a type
Card 1/3   EIDU-IMASh meter with the aid of wire strain gauges glued

SOV/180-59-2-10/34

Change in the Substructure of Metals in Repeated Cyclic Loading

to the specimen. The substructure was studied by the X-ray back-reflection method using a type BSV-I tube with a copper anode and linear focus (Fig 2). Figs 3 - 7 give patterns obtained after various numbers of cycles (up to 10^7). Figs 3 and 7 related to aluminium previously annealed at 450 ºC tested under repeated and variable sign bending, respectively, and stresses of 1.55 and 1.75 kg/mm^2, respectively. Figs 4 and 6 related to the repeated bending at stresses of 1.55 and 1.75 kg/mm^2, respectively, of aluminium previously annealed at 600 ºC, and Fig 5 to that of aluminium at a stress of 1.75 kg/mm^2, previously annealed at 500 ºC. The mechanical properties of aluminium with weakly- and strongly-developed substructures were compared: the results showed the superiority of the latter material. The work showed that in cyclic deformation the grain substructure of both aluminium and nickel became more complicated, this occurring in the early stages and

Card 2/3   ceasing after a definite number of cycles. The changes which occur in cyclically loaded aluminium depend on the nature of the substructure in the original grain; the

SOV/180-59-2-10/34

Change in the Substructure of Metals in Repeated Cyclic Loading

less pronounced this is, the greater are the changes.
There is a definite relation between the hardening of
the specimen in the initial stage of cyclic deformation
and the development of its substructure. Substructural
changes do lead directly to fatigue failure.
There are 7 figures and 14 references, 4 of which are
Soviet, 9 English and 1 German.

ASSOCIATION: Institut Mashinovedeniya AN SSSR (Machinery Institute
of the AS USSR)

SUBMITTED: March 15, 1958

Card 3/3

AUTHORS: Gal'perin, M.Ya., Kostyukova, Ye.P. and Rovinskiy, B.M.   SOV/180-59-4-14/48
            (Moscow)

TITLE: The Influence of Cyclic Loading on the Structure of
            Deformed Pure Metals

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
            nauk, Metallurgiya i toplivo, 1959, Nr 4, pp 82-87 (USSR)

ABSTRACT: X-ray studies of structural changes occurring in 99.99%
            aluminium and electrolytic nickel were carried out.
            Samples were annealed preliminarily deformed to 1, 2 or
            4% and subjected to cyclic stressing by bending. X-ray
            pictures are shown for the annealed sample, the sample
            after deforming and the sample after various numbers of
            cycles in Fig 2, 3, 4 and 5 for aluminium and Fig 7 for
            nickel. The annealed samples of both aluminium and nickel
            give sharp interference spots corresponding to simple
            structures with fairly perfect crystallites. After the
            preliminary deformation the spots are more diffuse because
            there are subgrains present and the subgrains themselves
            are not perfect. The behaviour of nickel under
            subsequent cyclic loading is different from that of
Card 1/2   aluminium. For aluminium the sharpness of the spots

The Influence of Cyclic Loading on the Structure of Deformed Pure
Metals   SOV/180-59-4-14/48

reappears. This restoration is greater, the greater the
amplitude of the stresses and the smaller the
preliminary deformation. No restoration is observed in
the X-ray picture of nickel. It is thought that the
difference in behaviour occurs because aluminium has a
low temperature of recrystallization. The increase in
perfection of the subgrains is thought to be a thermal
process causing recrystallization "in situ" to take place.
There are 7 figures and 10 references, 3 of which are
Soviet, 6 English and 1 German.

SUBMITTED: April 23, 1959

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PHASE I BOOK EXPLOITATION

Explanatory details within in parentheses)

proofread? I?O Programma (Subject)
Articles. Based on Data of the ...
tithe and Technical Society of ...
1960. 225 p. Errata slip inserted 3,...

Reviewer: I.V. Kudryavtsev, Doctor of T...
El. of Publishing House: L.M. T...
Technical Editor: L.V. ...
Machine Building (Russian); A.D. ...

PURPOSE: This collection of articles is in...
as plant laboratories and scientific resea...

COVERAGE: The articles contain data on t...
search dedicated to the study of fatig...
for strength. A number of pap...
small specimens are given...
articles are accom...

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in the Centrifugal Excitation of Alternating Forces

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VK/amb/grp
9-7-60

Card 1/1

10.7400

AUTHORS:

Gal'perin, M.Ya., Rovinskiy, B.M. and Sinayskiy, V.M.
(Moscow)

TITLE: On the influence of preliminary tensile plastic deformation on the fatigue strength of steel

PERIODICAL:

TEXT: Most authors mention only an increase in the fatigue strength as a result of increasing work hardening produced by applying tension. N. I. Chernyak (Ref.1: "Fatigue strength of preliminarily stretched steel". Symposium Tr. In-ta stroitel'noy mekhaniki AN UkrSSR, 1953) found that a small amount of plastic deformation by tension does not increase but lowers the fatigue of steel. For $\varepsilon^p = 1.0-2.0\%$ a minimum fatigue strength is reached, then the fatigue strength increases and for $\varepsilon^p = 12\%$ it reaches a value corresponding to that of undeformed steel. The work described in this paper was carried out for the purpose of

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On the influence of preliminary ...   S/179/61/000/003/014/016
                                      E073/E535

determining the relation between the magnitude of oriented
residual microstresses occurring during plastic deformation in
tension and the drop in the fatigue limit. Medium carbon steel,
Steel 45, of 25 mm diameter was used in the tests, the mechanical
characteristics of which were as follows:

$$\sigma_s = 39.8 \text{ kg/mm}^2, \quad \sigma_B = 66.0 \text{ kg/mm}^2$$

$$\delta_5 = 22.2\%, \quad \Psi = 4.89\%, \quad a_k = 9.1 \text{ kgM/cm}^2, \quad H_B = 152$$

Several batches of specimens, 12 in each batch, were produced.
The shape of the specimens was such that the same specimens could
be used, without further machining, for the fatigue tests. The
gauge length was 226 mm, the 20 mm long central section of which
had a diameter of 8 mm, Fig.1. After machining to the desired
size and surface quality the specimens were annealed in vacuo
at 780°C for two hours and then allowed to cool together with the
furnace. Following that, they were stretched at a rate of
2 mm/min within a range of 0 to 10%. For the gauge length the

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On the influence of preliminary ...   S/179/61/000/003/014/016
E073/E535

28971

error in measuring the length did not exceed 0.03%. The fatigue
tests were carried out with a loading frequency of 3000/min for a
total duration of 10^7 cycles.   Prior to the fatigue tests, the
oriented microstresses were determined by X-ray methods; two
X-ray diffraction patterns were taken from the same spot, one
before and one after loading. The obtained results are plotted in
Fig.2 and it can be seen that the maximum drop in the fatigue
strength was achieved in the range of preliminary deformations of
1 to 2%, which is in good agreement with the results obtained by
Chernyak (curve 3).   The deviation between his results and the
results of the authors of this paper (curve 1) is attributed to
the fact that Chernyak did not anneal his specimens after
machining. Fig.2 also gives the relation between the magnitude
of the oriented microstresses σ_p (kg/mm^2) and the magnitude of
preliminary deformation (curve 2).   It can be seen that this
curve has a minimum approximately for the same range of plastic
deformation as was observed for curve 1.   The curves 1 and 2
show similarity for small plastic deformations; the influence of
work hardening starts to manifest itself at $\epsilon^p \approx 2$% which leads

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On the influence of preliminary ...   S/179/61/000/003/014/016
                                        E073/E535

to an increase in the fatigue strength. The obtained results
confirm the assumption of the decisive role of residual
oriented microstresses on the fatigue strength. This is in good
agreement with data published earlier by the authors (Ref.6;
Izv.AN SSSR, OTN, Mekhanika i mashinostroyeniye, 1961, No.2) on
the relation between oriented microstresses and the residual
plastic deformation. However, it is not as yet possible to
propose a simple mechanical model of the phenomenon since the
magnitude of the oriented microstresses is much greater than the
drop in the fatigue limit.   There are 2 figures and 6 Soviet
references.

ASSOCIATION: Institut mashinovedeniya AN SSSR
               (Institute of Machine Science AS USSR)

SUBMITTED: January 18, 1961

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On the influence of preliminary ...   S/179/61/000/003/014/016
28971
E073/E535

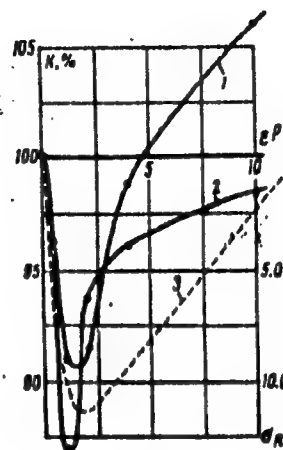Фиг. 1
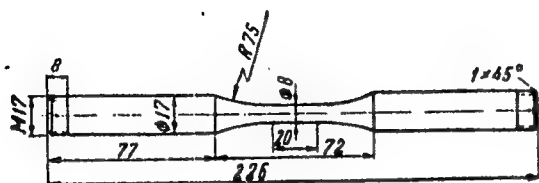
Fig.1

фиг. 2

Fig.2

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18.1111.   1416, 1496, 1045

AUTHORS: Uzhik, G.V., Gal'perin, M. Ya., Koshelev, P.F., Livshits, G. L., and Terent'yeva, Ya. K.

TITLE: The Mechanical Properties of Low-alloy Steels (Plates)

PERIODICAL: Stal', 1961, No. 1, pp. 68 - 73

TEXT: The application of low-alloy high-strength steels instead of the standard $C_T.3c\pi$ (St.3sp) and $C_T.3\kappa\pi$ (St.3kp) carbon steels makes it possible to reduce the weight of the structures by about 15 - 20%. To determinate the mechanical properties of these types of steels at low temperatures (-70°, -196°C) tests were carried out with the 19Г (19G); 09Г2 (09G2); 14Г2 (14G2); 15ГС (15GS) 12ХГН (12KhGN) grade steels produced by the Al'chevskiy metallurgicheskiy zavod (Al'chev Metallurgical Plant), and the "Krasnyy Oktyabr" Plant, having the following chemical composition:

Table 1:
1 - chemical composition of investigated melts
2 - steel grade (Number of melts)
3 - plate thickness, mm

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The Mechanical Properties of Low-alloy Steels (Plates)

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A054/A033

① Химический состав исследованных плавок, %

② Марка стали (номер плавки)	Тол щина листа мм	C	Si	Mn	Ni	Cr	Cu	P	S	Al	Ti
19Г (4516)	9	0,16	0,27	0,89	—	—	0,020	0,035	0,019	—	—
12ХГН(2507)	12	0,15	0,22	1,22	1,04	0,36	0,07	0,027	0,030	0,03	0,03
14Г2 (1585)	20	0,14	0,27	1,38	0,14	0,26	0,15	0,037	0,020	—	—
14Г2 (3114)	20	0,18	0,33	1,62	0,12	0,21	0,13	0,034	0,023	—	—
15ГС (3184)	20	0,12	0,55	1,22	0,11	0,16	0,11	0,032	0,018	—	—
15ГС (3186)	20	0,16	0,72	1,32	0,17	0,29	0,14	0,030	0,016	—	—
09Г2	11	0,11	0,35	1,59	0,05	Следы TRACES	0,07	0,012	0,032	0,03	Следы

The steels were tested for tensile strength in the temperature range between +20°
and -196°C, for notch impact strength and static bending, (+20°, -70°C), more-
over for fatigue, (flat specimens bent in one plane, at +20°C, cylindrical speci-
mens with bending and torsion). The tensile strenth tests were carried out on a
30 -ton multipurpose hydraulic test machine, in which the speed of the upper grip
is 0.3 mm/min, the lower grip being stationary; the coolant used up to -70°C was
ethyl alcohol, and up to -196°C liquid N. Prior to immersion each specimen was
held at the test-temperature for 30 minutes. The notch impact strength tests were

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The Mechanical Properties of Low-alloy Steels (Plates)

made with 10x10x55 mm samples with Mesnager notches. An HK-30 (MK-30) type drop test machine was employed, as prescribed by ГOCT (GOST 1524-42). For static bending the 30-ton multipurpose test machine was also used: the bending was plotted (scale 24:1) by a special device. Fatigue tests at room temperature with flat specimens were carried out with the MYK (MUK)-100 type machine (for plain bending in one plane with a load frequency of 1500/min) while cylindrical samples were tested for the fatigue on HY (NU) type machines (3000 loadings/min). Samples of various thickness, with polished and unground surfaces, with and without notches were studied. Strength and ductility: The relationship between strength, ductility and temperature for the various steel grades is shown in table 2, while figure 1 represents the dependence of the $\frac{\sigma_{0.2t}}{\sigma_{0.2}}$ (a) and $\frac{\sigma_{Bt}}{\sigma_B}$ (b) ratios on temperature. The strength limit of the tested steels increases approximately in the same way to -70°C, but increases intensively mainly in the 19G type steel at -196°C. The transition of the material from the plastic into the brittle condition is characterized by the gradual change of the differences $(\sigma_B - \sigma_{0.2})$ and $(S_k - \sigma_{0.2})$ under the effect of the temperature reduction, (Fig. 2). The smaller the difference the nearer the material is to brittleness. At -196°C the plasticity of 19G, 12KhGN, 14G2 and 15GS steels decreases considerably, mainly that of the 14G2 type. Elongation per unit length and la-

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The Mechanical Properties of Low-alloy Steels (Plates)   S/133/61/000/001/013/016
A054/A033

teral compression are characteristic for the metal with regard to change in ductility and its ability to maintain ductility even at low temperatures, which eliminates the risk of brittle fracture (mainly under dynamic load). These properties do not change in 19G and 12KhGN grade steels and only slightly in 14G2 and 15GS. The most sudden decrease in notch impact strength at temperatures between +20°C and -70°C could be observed in 14G2 and 15GS ($a_k < 1$ kgm/sq cm), most probably due to the heat condition of rolling. The smallest drop in this property ($a_k = 2.6$ kgm/sq cm) was found for 09G2 steel. The trend to brittle fracture was tested by brittle loading (Fig. 4). The diagram plotted for prismatic samples with Mesnager notches proves that the highest resistance against brittle fracture up to -70°C is shown by 09G2 steel. 12KhGN is not highly resistant against brittle failure at -70°C, 14G2 loses its toughness already at -30°C, 15GS also tends to produce elastic-plastic deformations at all temperatures. Table 3 clearly shows that 14G2 has the strongest trend to brittle failure, between +20° and -70°C (due to a higher carbon content), while the highest degree of failure resistance can be found in 09G2. In the fatigue tests the results were affected by the surface of the samples. In rough flat samples of 12KhGN steel the fatigue limit is 31.8% lower than in samples having a smooth surface. Polished cylindrical samples have a higher fatigue limit than polished flat samples. The highest fatigue limit

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The Mechanical Properties of Low-alloy Steels (Plates)   S/133/61/000/001/013/016
A054/A033

was found in 15GS steel (melt 3166), while at room temperature there was hardly
any difference in fatigue limit between the grades 14G2, 15GS and 19G, both for
polished and notched surfaces. Notched samples (with stress concentration on the
surface) have the highest fatigue limit when made of 19G steel, (Fig. 7). There
are 7 figures, 4 tables and 2 references: 1 Soviet, 1 Non-Soviet .
Table 2:

Indices of mechanical properties of low-alloy steels for tensile tests
1 - steel grade; 2 - test temperature

Показатели механических свойств низколегированных сталей при испытаниях
на растяжение

① Марка стали ([C]. %)	② Темпера- тура испытания °C	$\sigma_{0,2}$ кг/мм² kg/mm²	σ_B кг/мм² kg/mm²	σ_K кг/мм² kg/mm²	δ_a %	ψ %
19Г (19G)	+ 20	34,9—35,9	52,1—53,3	87,8—99,2	27,7—28,6	47,8—51,2
	— 20	38,8—39,0	57,5—58,0	96,0—98,8	29,5—33,6	49,2—51,0
	— 40	41,4—41,8	59,0—59,3	96,9—100,8	29,8—31,5	48,9—50,8
	— 70	44,0—44,3	61,9—62,4	100,4—103,3	30,0—32,5	47,3—48,6
	—196	88,5—88,8	93,9—94,2	118,2—118,9	20,6—22,2	21,5—23,5
	+ 20	44,5—45,9	63,2—63,5	93,1—94,0	20,2—22,3	40,3—41,2
	— 20	46,5—47,4	67,2—67,3	98,9—99,9	22,3—24,3	39,1—39,5

Card 5/8

X

GALPERIN, M.Sh.

PURPOSE:

CONTACT:

Card 1/

Cyclic Metal Strength (Cont.)   SOV/6025

and growth of fatigue cracks, the role of plastic deformation
in fatigue fracture, an accelerated method of determining
fatigue strength, the plotting of fatigue diagrams, and
various fatigue test methods. New data are presented on the
sensitivity of high-strength steel to stress concentration,
the effect of stress concentration on the criterion of fatigue
failure, the effect of the size factor on the strength of
metal under cyclic loads, and results of endurance tests of
various machine parts. Problems connected with cyclic metal
toughness, internal friction, and the effect of corrosion
media and temperature on the fatigue strength of metals are
also discussed. No personalities are mentioned. Each article
is accompanied by references, mostly Soviet.

TABLE OF CONTENTS:

NATURE OF FATIGUE FRACTURE

Cyclic Metal Strength (Cont.)   SOV/6025

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S/137/62/000/012/048/085
A006/A101

AUTHORS: Ivanova, V. S., Gal'perin, M. Ya.

TITLE: An analysis of the possibility of using new criteria for rapidly
             determining the fatigue limit

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1962, 102, abstract
             121632 (In collection: "Tsiklich. prochnost' metallov", Moscow,
             AN SSSR, 1962, 134 - 140)

TEXT: The possibility is analyzed of using criterion N_{cr}, determined
from one of the fatigue curves (within the range of a given metal group), to
establish the rated value of the fatigue limit, according to formula $\sigma_{-1} =$
$= \sigma_{cr} - \alpha_\sigma$ applicable to fatigue rotation bending tests and symmetrical bending
in one plane; σ_{cr} is the critical stress or the stress causing failure at the
critical number of cycles N_{cr}, and α_σ is the cyclic constant. The number of
cycles N_{cr} for investigating the group of low-alloy steels, can be calculated
from the formula $N_{cr} = C_p \cdot T_s E \gamma A \beta_{av}^{-2}$, where C_p is the specific heat capacity;

Card 1/2

An analysis of the possibility of using new...

T_s is the melting point; E is the modulus of elasticity; γ is the specific weight; f_{av} is the coefficient equal to 8.5 kg/mm^2. The use of the new fatigue criteria makes it possible to reduce considerably the duration of fatigue tests; in the presence of sharp stress concentrators N_{cr} increases as compared to its value for smooth specimens.

A. Nikonov

[Abstracter's note: Complete translation]

Card 2/2

S/129/62/000/002/008/011
E073/E535

AUTHORS: Grozinskaya, Z.P., Candidate of Technical Sciences and
Gal'perin, M.Ya., Engineer

TITLE: On increasing the fatigue strength by work-hardening
the surface with balls

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov
no 2, 1962, 43-45

TEXT: The authors investigated the influence of surface
work-hardening of smooth 10 mm diameter specimens made of normal
ised steel 45 (0.45% C, 0.3% Si, 0.7% Mn, 0.08% Cr, 0.1% Ni
0.017% S, 0.028% P) by means of a 3-ball attachment on a lathe
The fatigue tests were in pure bending in a symmetrical cycle of
a frequency of 3000 cycles/min with a total duration of 10^7 cycles
Various characteristics of the work-hardened layer were **produced**
by changing the conditions of work-hardening so as to obtain
a) various surface hardness values with a constant depth ⌐ of the
work-hardened layer and b) various depths of the work-hardened
layer and a constant surface hardness   The following conclusions

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On increasing the fatigue   S/129/62/000/002/008/014
                                   EO73/E535

were arrived at:
1) A reduction of the feed rate and an increase in the number of
passes at the appropriate pressure brings about an increase in
hardness as well as an increase in the fatigue strength, provided
that $\delta/R < 0.2$ (R - radius of the work-hardened specimen).
2) The most rational ball diameter is the one which produces maximum
work-hardening whilst simultaneously maintaining the
ratio $\delta/R > 0.2$
3) For improving the fatigue strength, the depth and degree of
work-hardening must in every case be chosen in accordance with
the work-hardened material and the work-hardening conditions
The paper contains plots of the fatigue strength, the depth of the
work hardened layer and the hardness resulting from work-hardening
as a function of pressure, feed rate, ball diameter and the number of
passes, for a ball load of 50 kg. Fig 2 shows plots of the
increase in the fatigue strength as a function of the hardness d_1
(Fig 2a) and the relative depth of work-hardening (Fig 2b)
There are 2 figures 1 table and 5 Soviet-bloc references

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S/032/62/028/012/018/023
B104/B186

AUTHOR: Gal'perin, M. Ya.

TITLE: The use of metal testing machines in examining the dynamic strength of glass-reinforced plastic plates

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 12, 1962, 1518-1520

TEXT: Attempts were made to test plastics of the type AΓ-4C (AG-4S), CBAM (SVAM) and ПН-1 (PN-1) in the same manner as metal specimens on a cyclic bending test machine, type MУK-100 (MUK-100). The usual shape of test specimens with tapered test areas, holed and notched for clamping, proved to be of little use. Furthermore, cyclic bending tests of the glass fiber-reinforced plastics caused peeling due to defects in the fibers resulting from mechanical working. Therefore specimens in the form of bars with no holes and a minimum of mechanical working defects were used, which were fastened into the testing machine by a special clamping device. The results (Fig. 2) show good agreement with those known from published data. With the clamping device thus modified, standard metal testing machines can be successfully used for testing glass-fiber plastics (with a thickness of

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The use of metal testing machines in...

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10-16 mm, and cross-sections of 250-400 mm^2). There are 2 figures and 1 table.

Fig. 2. Fatigue strength of glass-reinforced plastics.
Legend: (1) АГ-4с (AG-4S),
(2) СВАМ (SVAM), (3) ПН-1 (PN-1).
(A) stress, kg/mm^2, (B) number of load cycles.

Card 2/2

SARKHOSH'YAN, G.N., inzh.; GAL'PERIN, M.Ya., inzh.

Mechanized welding in the repair of automobile assemblages. Svar.
proizv. no.9:29-32 S '63.

(MIRA 16:10)

1. Nauchno-issledovatel'skiy institut avtomobil'nogo transporta
(for Sarkhosh'yan). 2. Institut mashinovedeniya AN SSSR (for
Gal'perin).

L 32454-65   EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)   Pf-4   JD/HM

ACCESSION NR: AP4047224   S/0125/64/000/010/0014/0019

AUTHOR: Gal'perin, M. Ya. (Engineer); Sarkhosh'yan, G. N. (Engineer)

TITLE: The determination of the mechanical properties of weld joints in thin
steel sheets
SOURCE: Avtomaticheskaya svarka, no. 10, 1964, 14-19

TOPIC TAGS: low carbon sheet, butt weld, propane butane mixture, carbon di-
oxide, acetylene oxygen torch, fatigue limit, weld reinforcement

ABSTRACT: The mechanical properties of low-carbon thin sheets joined by dif-
ferent welding methods were determined. 0.9 mm thick "08" steel specimens
had the following composition: 0.05 to 0.11% C; 0.03% Si; 0.25 to 0.50% Mn;
0.04% P; 0.04% S; 0.1% Cr; 0.25% Ni. Specimens were cold rolled but no addi-
tional heat treatment was applied. Investigations were conducted at the Institute
of Machine Building (Institut mashinovedeniya) under the supervision of G. V.
Uzhik, Doctor of technical sciences. The static strength of the butt welds under-
went negligible changes in comparison with the parent metal. However, elonga-

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ACCESSION NR: AP4047224

tion per unit length and reduction decreased appreciably. The highest fatigue li-
mit was displayed by specimens with a regular weld produced by carbon-dioxide
semi-automatic welding. The fatigue limit of specimens joined by propane-bu-
tane gas torch exceeded that of weld made by acetylene-oxygen flame by 17%.
Reinforced butt joints produced by manual propane-butane method proved 15%
more resistant to fatigue deterioration than regular seam welds. The fatigue li-
mit of specimens welded in carbon dioxide by semi-automatic method was 23%
higher than that of similar joints produced by manual acetylene-oxygen torch and
5% higher than similar joints obtained by manual propane-butane welding. Orig.
art. has: 5 figures and 2 tables.

ASSOCIATION: [Gal'perin] NIImashinovedeniya (Scientific Research Institute for
Machine Building); [Sarkosh'yan] NIIAT (Scientific Research Institute of Automation)

SUBMITTED: 17Feb64   ENCL: 00   SUB CODE: MM

NR REF SOV: 003   OTHER: 000

Card   2/2

GAL'PERIN, M.Ya.

Determining the tendency to brittle fracture in beams of varying sizes in the presence of concentrated stresses. Zav. lab. 31 no.11:1384-1385 '65. (MIRA 19:1)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut mashino-vedeniya.

L 04290-67   EWT(m)/T/EWP(t)/ETI   IJP(c)   JD

ABSTRACT: The stability of fatigue defects in metals was studied on both aluminum and copper specimens. The study supplements the results of an earlier investigation by B. M. Rovinskiy and V. G. Lyutsau (FMM, 1961, 12, 305). The work was carried out by measuring the change in x-ray scattering by the metal specimens in the fatigued and relaxed state. The effect of aging on the plasticity and durability of cyclically deformed copper was also studied. The experimental data obtained in this part of the investigation were treated after the method of N. N. Davidenkov and G. T. Nazarenko (ZhTF, 1953, 23, 741). The experimental results are presented graphically (see Fig. 1). It was found that the intensity of scattered x-rays is notably dependent on deformation of the crystal lattice (caused by the cyclical deformations) and on aging (connected with the relaxation of the deformed crystal
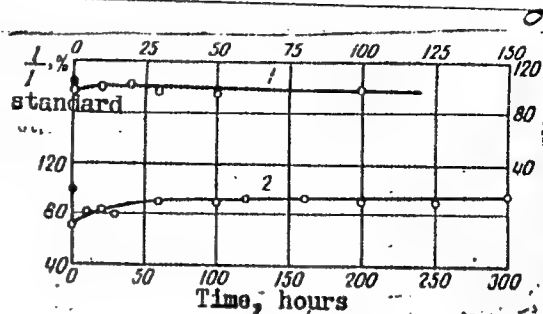
Card 1/2

UDC: 539.43:539.292

L 04290-67

ACC NR: AP6018949

Fig. 1. Integral intensity of the Debye
line (400) of cyclically deformed copper
as a function of aging period. Solid
dots represent the relative scattered
intensity for the specimens in the initial
state. $1 - 10^7$ cycles $\sigma_{max} = 10$ kg/mm^2;
$2 - 10^6$ cycles $\sigma_{max} = 16$ kg/mm^2; aging
temperature - 80C.

lattice). The authors conclude that the vacancy and micropore defects heal with
time, provided that the latter are smaller than λ (critical), that vacancies are
precipitated on pores and cracks in excess of λ (critical), and that a general
coagulation of micropores smaller than λ (critical) takes place in the aged
specimens. Orig. art. has: 4 graphs.

SUB CODE: 11/ SUBM DATE: 02Jul65/ ORIG REF: 005/ OTH REF: 002

Card 2/2

GALUZIN, M. --[Ye]

"Morphological and Functional Changes in the Blood Vessels of the Brain in Various Diseases of the Latter as Seen on Roentgen Pictures (Clinicoexperimental Angiographic Investigation)." Dr Med Sci, Leningrad Psychoneurological Inst, Leningrad, 1954. (RZhBiol, No 4, Oct 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions. (10)

SO: Sum. No. 481, 5 May 55

GAL'PERIN, M. Ye. Doc Med Sci --(diss) " The striction*l* method of discovering *detecting*
toxin*s* in cases of infectious diseases. (Clinical and laboratory study)" Mos, 1955
19 pp 20 cm, (1st Mos Order of Lenin Med Inst), 110 copies
(KL, 7-57, 108)

59

GAL'PERIN, M. Ye.

New methods of early diagnosis of infectious diseases. Zhur.
mikrobiol.epid. i immun. no.8:54-59 Ag '55   (MLRA 8:11)
        (SERUM DIAGNOSIS,
            in communicable dis.)

GAL'PERIN, M.Ye., dotsent; POPOVA, N.S.

Interstitial pneumonias in some infectious diseases. Sbor. trud.
Kursk. gos. med. inst. no.13:207-210 '58.   (MIRA 14:3)

1. Iz kliniki infektsionnykh bolezney (zav. - dotsent M.Ye. Gal'perin)
Kurskogo gosudarstvennogo meditsinskogo instituta.
              (PNEUMONIA)

GAL'PERIN, M.Ye., dotsent; SERGEYEV, V.I., assistent

Influence of bromine and caffeine on the vascular reaction in patients with acute and chronic dysentery. Sbor. trud. Kursk. gos. med. inst. no.13:211-213 '58.   (MIRA 14:3)

1. Iz kliniki infektsionnykh bolezney (zav. - dotsent M.Ye.Gal'perin) Kurskogo gosudarstvennogo meditsinskogo instituta.
    (BROMINE--PHYSIOLOGICAL EFFECT)   (CAFFEINE--PHYSIOLOGICAL EFFECT)
        (REFLEXES)   (DYSENTERY)

GAL'PERIN, M.Ye.; SERGEYEV, V.I.

Vascular reactions in patients with acute and chronic dysentery.
Vrach. delo no.3:319 Mr '60.   (MIRA 13:6)

1. Kafedra infektsionnykh bolezney Kurskogo meditsinskogo insti-
tuta.
        (DYSENTERY)   (BLOOD PRESSURE)

GAL'PERIN, M.Ye.

Iterated limits of certain trigonometric series. Uch. zap.
Kab.-Bal. gos. un. no.17:3-4 '63.

Sufficient conditions for the summability of double series
by Riemann's method (R_{pq}).   Ibid.:4-6   (MIRA 17:1)

ABRAMOV, Emmanuil Adol'fovich; kandidat istoricheskikh nauk; GAL'PERIN, M.Yu., kandidat istoricheskiy nauk, nauchnyy redaktor; VLADIMIRSKIY, D.M., redaktor izdatel'stva.

[The creative activity of the masses is a great force in the struggle for technical progress] Tvorcheskaia aktivnost' mass-velikaia sila v bor'be za tekhnicheskii progress. Leningrad, Ob-ve po rastrostraneniiu polit. i nauchn. znanii RSFSR, Leningr. otd-nie, 1956. 53 p.

(MIRA 10:4)

(Efficiency, Industrial)

GAL'PERIN, Mikhail Zakharovich [Hal'perin, M.Z.], kand.ekonom.nauk;
ALEKSANDROVA, V.P., kand.ekonom. nauk, red.

[Organization of smooth and rhythmic work in industrial
enterprises] Organizatsiia rivnomirnoi i ritmichnoi roboty
promyslovoho pidpriiemstva. Kyiv, 1960. 33 p. (Tovarystvo
dlia poshyrennia politychnykh i naukovykh znan' Ukrains'koi
RSR. Ser.7, no.4).   (MIRA 13:4)
          (Industrial management)

GALPERIN, N.   DECEASED   1963/3

c' 1962

FINANCE -
industry

see ILC

SOKOLOVSKIY, Lev Osipovich; GAL'PERIN, N.B., nauchnyy red.; SACHIKOV, M.I., red.; PEREDERIY, S.P., tekhn. red.

[Progressive methods of intricate shape aluminum alloy casting] Progressivnye metody fasonnogo lit'ia iz aliuminievykh splavov. Moskva, Proftekhizdat, 1962. 94 p.   (MIRA 15:7)
(Aluminum founding)

GAL'PERIN, N. I., and KVASHA, V. B.

"Determination and Maintenance of the Optimum Regime
of a Temperature Field in Chemical Reactors."

Report submitted for the Conference on Heat and Mass Transfer,
Minsk, BSSR, June 1961.

SHANIN, S.A.; BALABAY, F.I.; KONONENKO, D.F.; MIKULIN, G.I. [Mykulin, H.I.];
BOROVSKAYA, N.V. [Borovs'ka, N.V.]; SHINKEVICH, A.P. [Shynkevych, A.P.];
LIBERZON, L.M.; AMELIN, A.G. [Amelin, A.H.]; BURYAK, K.A.; PECHONKIN,
V.V. [Piechonkin, V.V.]; YATSENKO, N.N.; GAL'PERIN, N.I. [Hal'perin,
N.I.]; PEBALK, V.L.; CHEKHOMOV, Yu.K.

Inventions and improvements; certificates of inventions. Khim.prom.
[Ukr.] no.2:62-64 Ap-Je '65.   (MIRA 18:6)

GAL'PERIN, N. K.

The following is among dissertations of the Leningrad Polytechnic Institute imeni Kalinin:

"Methods of Calculating the Wear Time of Delayed-Action Electromagnetic Switches." 20 March 1950. Transition processes in delayed-action electromagnetic switches have been investigated. Calculation was made of the transition processes with consideration of the leakage of the magnetic flux, saturation of the steel of the magnetic conductor, and eddy currents in continous sections of the magnetic circuit.

SO: M-1048, 28 Mar 56

GAL'PERIN, N. K.

"Methods of Calculating the Operating Time in Electromagnetic Delayed-Action Circuit Breakers," (Metody rascheta vremeni srabatyvaniya elektromagnitnykh vyklyuchateley s vyderzhkoy vremeni), Elektrichestvo, No. 7, 1950.

LPI (Leningrad Polytechnic Institute)
Dissertation for Candidate Degree

GAL'PERIN, Nikolay Semenovich; ANTOSENKOVA, L., red.; TROYANOVSKAYA, N.
tekhnicheskiy red.

[New developments in the organization of the material and equipment
supply system] Novoe v organizatsii material'no-tekhnicheskogo
snabzheniia. Moskva, Gos. izd-vo polit. lit-ry, 1957. 54 p.
     (Industry)   (MIRA 11:3)

ARTEMOV, Yu.M., kand. ekonom. nauk; GAL'PERIN, N.S., kand. ekon. nauk; GUBIN,
B.V., kand. ekon. nauk; ZHUKOV, V.N., kand. ekon. nauk; OCHKOV, M.S.
kand. ekon. nauk; OSKORDOV, V.P., starshiy ekonomist; BARNGOL'STS, S.B.,
dotsent, kand. ekon. nauk; SIBIRYAKOV, L.Ye.; IVANOV, N.N.; RABINOVICH,
M.A., ekspert; LIPSITS, V.B., kand. ekon. nauk; VOLKOV, S.I., kand.
ekon. nauk; KOROLEVA, Ye.P., aspirantka; RYUMIN, S.M., red.; SUBBOTINA, K.,
red.; TELEGINA, T., tekhn. red.

[Planning and calculating the cost of industrial production] Voprosy pla-
nirovaniia i kal'kulirovaniia sebestoimosti promyshlennoi produktsii. Mo-
skva, Gosfinizdat, 1961. 183 p.   (MIRA 14:8)

1. Moscow. Nauchno-issledovatel'skiy finansovyy institut. 2. Sotrudniki
Nauchno-issledovatel'skogo finansovogo instituta (for Artemov, Gal'perin,
Gubin, Zhukov, Ochkov, Oskordov). 3. Vsesoyuznyy zaochnyy finansovo-ekonom.
institut (for Barngol'ts).4.Glavnyy bukhgalter Moskovskogo elektrozavoda
(for Sibiryakov). 5. Starshiy konsul'tant Upravleniya bukhgalterskogo
ucheta Ministerstva finansov SSSR (for Ivanov, Rabinovich). 6. Nachal'nik
podotdela obshchikh ekonomicheskikh voprosov tsenoobrazovaniya Byuro tsen
pri Gosplane SSSR (Lipsits). 7. Moskovskiy ekonomiko-statisticheskiy in-
stitut (for Koroleva)

(Costs, Industrial)

GAL'PERIN, P. Ya.

"Post-Leukotomic Psychological Changes in Schizophrenics," Nevropatol.
i Psikhiat., 17, No.4, 1948

Psychiatric Lab., Central Inst. of Psychiatry